

PATENT SPECIFICATION

NO DRAWINGS ATTACHED

1088,992



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Date of Application and filing Complete Specification: Sept. 9, 1964.

No. 36965/64.

Application made in United States of America (No. 310162) on Sept. 19, 1963.

Application made in United States of America (No. 330271) on Dec. 13, 1963.

Complete Specification Published: Oct. 25, 1967.

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Index at acceptance: —A5 R(83L, 83U); B5 N(17X, 17Y, 22X, 22Y, 46X, 46Y, 47X, 51X, 55X, 76Y, 220, 221, 249, 254Y, 256, 257, 260Y, 264Y, 280Y, 281Y, 282Y, 283Y, 284Y, 290Y, 291Y, 298Y, 299Y, 317, 322Y, 326Y, 330Y, 334Y, 335Y, 336, 338, 358, 467, 471, 472, 473, 477, 479, 493, 500, 501, 502, 507, 510, 511, 512, 541, 548, 559, 627, 641, 670, 671, 678, 679, 701, 751, 805); C3 P(4A, 4C6A, 4C9, 4C12A, 4C13C, 4C15, 4C17, 4C20B, 4C20C, 4C20D1, 4D1A, 7A, 7C6A, 7C9, 7C12A, 7C13C, 7C15, 7C17, 7C20B, 7C20C, 7C20D1, 7D1B)

Int. Cl.:—A 61 I 15/06//B 32, C 08 f

COMPLETE SPECIFICATION

Protective Dressings

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ERRATA

SPECIFICATION No. 1,088,992

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Page 2, line 34, for "obtainel" read "obtained"

Page 2, lines 95 and 96, for "artesan" read "artisan"

Page 2, line 122, for "Ths" read "This"

Page 4, line 7, for "pastic" read "plastic"

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THE PATENT OFFICE

11 January 1968

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25 time. Attempts to employ special tape or other like dressings on moist body surfaces especially, have universally met with failure. The moisture encountered upon application prevents adherence of the tape. Attempts to overcome these shortcomings by the use of ointments or other like substances have likewise met with failure, due to the fact that the moisture present shortly causes the ointments and other like substances to be washed away.

30 It has now been found possible to prepare a dressing which will adhere to body surfaces and notably on moist body surfaces including

in some cases of intra-oral use.

60 According to the present invention there is provided a protective dressing comprising a sheet of plastic adhesive material comprising a blend of a water soluble or water swellable hydrocolloid and a water insoluble, viscous elastic binder.

65 According to a further feature of the invention there is provided a process for preparing a protective dressing comprising mixing a water soluble or water swellable hydrocolloid and a water insoluble viscous elastic binder to produce a plastic, adhesive mix-

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Int. Cl.:—A 61 I 15/06/B 32, C 08 f

COMPLETE SPECIFICATION

Protective Dressings

We, E. R. SQUIBB & SONS, INC., a corporation organised and existing under the laws of the State of Delaware, United States of America, of 745, Fifth Avenue, New York, State of New York, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to protective dressings, and more particularly, to protective dressings which may be applied to moist body surfaces such as those of the oral cavity and remain adhered thereto over extended periods of time.

Heretofore, there has not been available to dentists, dental surgeons, dermatologists and other like practitioners of the medical art any dressings which could be used locally on body surfaces both internal and external, either moist or dry, over extended periods of time. Attempts to employ special tape or other like dressings on moist body surfaces especially, have universally met with failure. The moisture encountered upon application prevents adherence of the tape. Attempts to overcome these shortcomings by the use of ointments or other like substances have likewise met with failure, due to the fact that the moisture present shortly causes the ointments and other like substances to be washed away.

It has now been found possible to prepare a dressing which will adhere to body surfaces and notably on moist body surfaces including

moist surfaces of the oral cavity. These dressings are soft, pliable, and easy to apply, and when applied, conform to the curvature of the surface upon which they are applied, and especially in the case of application to the internal surface of the oral cavity. The dressing of this invention has no odor or taste, and once it is applied to the surface to be treated, it will not of itself peel off, chip off and fall off, but slowly wear off over an extended period of time. The dressing of this invention will remain in position through all activities of the person being treated, for example, during drinking, eating, sleeping, speaking, chewing or biting, without any signs of irritation or toxicity.

In addition to their unique adhering properties, the dressings of this invention have been found to promote the healing of the areas treated therewith. The use of the dressings, of this invention have been found to reduce the time for healing from days to hours in some cases of intra-oral use.

According to the present invention there is provided a protective dressing comprising a sheet of plastic adhesive material comprising a blend of a water soluble or water swellable hydrocolloid and a water insoluble, viscous elastic binder.

According to a further feature of the invention there is provided a process for preparing a protective dressing comprising mixing a water soluble or water swellable hydrocolloid and a water insoluble viscous elastic binder to produce a plastic, adhesive mix-

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ture and shaping the mixture to the form of a sheet.

5 The adhesive materials used in accordance with this invention may comprise, as the water soluble or swellable hydrocolloid, poly-
vinyl alcohol, powdered pectin, gelatin, car-
boxymethylcellulose, high molecular weight
polyethylene glycol i.e. the solid type of
10 material sold under the Trademark "Carbo-
wax" or carboxypolymethylene or a mixture
of two or more of these substances and the
viscous elastic binder may be a natural or
synthetic gum-like substance such as natural
15 rubber, silicone rubber, acrylonitrile rubber,
polyurethane rubber, polyisobutylene, and suc-
rose acetate isobutylate or a mixture of such
substances. The viscous elastic binder binds
the hydrocolloid and, in addition, renders the
20 blend elastic and pliable. It has been found
that the use of polyisobutylene, having in-
corporated therein a powdered mixture of
pectin, gelatin, and carboxymethylcellulose,
gives a most satisfactory adhesive material.

25 In conjunction with the natural or synthetic
binders employed in the practice of this in-
vention, it may be desirable to employ plas-
ticisers or solvents, such as mineral oil or
petrolatum in combination therewith, to im-
prove adherence characteristics and/or to
30 provide the desired consistency.

In addition to the use of sheets of the
adhesive material of this invention by them-
selves, it has been found that very satisfac-
35 tory results are obtained when a thin, pliable
water impervious and preferably water in-
soluble, backing film is secured to one side
of a sheet of the adhesive material. The water
impervious backing films which may be em-
ployed in the practice of this invention in-
40 clude *inter alia* water insoluble films pre-
pared from such materials as polyethylene,
polymers and copolymers of vinylidene
chloride, condensation products of ethylene
glycol and terephthalic acid and polypropy-
45 lene. Most preferably, we employ a polyethy-
lene film in the practice of this invention,
although the other water impervious films
also give satisfactory results.

50 In the practice of this invention, medica-
ments may be applied and retained on the
affected areas on the body surfaces to be
treated by the employment of the novel
dressings of this invention. For these pur-
poses, the medicament may be applied on
55 the surface of the dressing that will come in
contact with the affected area to be treated
or may be incorporated in the adhesive com-
position from which the dressing is made.
The medicament may be applied to the sur-
60 face of the dressing as by dusting, spraying
or spreading. Among the medicaments which
may be employed are included such sub-
stances as insulin, antibiotics, for example,
amphoterecin, tetracycline; anaesthetics, such

as benzocaine; anti-inflammatories, such as
triamcinolone acetonide. 65

The water impervious film which may be
employed in the practice of this invention
may have a thickness of from 0.0005 inches
to 0.05 inches and most preferably from
70 0.0005 to 0.002 inches. The adhesive
material to one surface of which the imper-
vious backing film is applied, is in sufficient
amount to give a complete coverage of the
wounded area to be treated. It has also been
75 found that it is possible to apply a water
impervious backing film to the dressings
of this invention after they have been placed
on the surface being treated.

The size and thickness of the sheet of ad-
80 hesive material depends on the area to be
treated and the duration of application de-
sired.

The thickness of the individual sheet of
plastic adhesive material will of necessity de-
85 termine the length of duration of application
of the dressing. The thinner the sheet, the
shorter the duration of application. In other
words, the thinner the sheet, the less time
it takes to naturally disperse. 90

In the practice of this invention, it is pre-
ferred to use a sheet of plastic adhesive
material having a thickness from 0.0001"
to 0.01" although, the choice of the thickness
95 for the sheet may be left to the skilled ar-
tesan. In the embodiment of this invention
wherein a water insoluble backing is em-
ployed, the water insoluble backing acts to
retard the rate of dispersion of the sheet
of adhesive material. 100

In the practice of this invention the novel
dressings of the invention may be cut to the
proper size to completely cover the affected
area being treated. The dressing may then
105 merely be placed on this area, the natural
moistness thereof causing the adhesive
material to adhere to the affected area. In
the case where a water impervious backing
material is employed on one surface, the
110 dressing remaining after the desired length
of treatment may be easily removed and dis-
carded and a new dressing of the same type
employed as a replacement. The invention is
illustrated by the following examples:

EXAMPLE 1. 115

Fifty-eight grams of polyisobutylene are
heated to 70—80° C. Forty-two grams of a
mixture of pectin, gelatin, and sodium car-
boxymethylcellulose is then mixed in with
120 the heated polyisobutylene and the mix-
ture allowed to cool, thereby forming a plas-
tic dough-like substance. This dough-like sub-
stance is passed through a roller mill to make
the mixture more uniform, and the dough is
125 then flattened in a hydraulic press to form
a sheet of the desired thickness. A sheet of
thin gauge polyethylene film is then pressed
over one side and the resultant mat is cut

into strips, squares or other shapes of dressing of the desired size.

EXAMPLE 2

- 5 The process of Example 1 is followed except that instead of 58 grams of polyisobutylene, there is substituted a mixture of 56 grams of polyisobutylene and 2 grams of petrolatum. A satisfactory dressing is thus obtained.

EXAMPLE 3

- 10 The procedure of Example 1 is followed except that instead of the 58 grams of polyisobutylene, there is substituted a mixture of 55 grams of polyisobutylene and 1 gram of mineral oil, which mineral oil has been preheated to 70—80° C. A satisfactory dressing is thus obtained.

EXAMPLE 4

- 20 The procedure of Example 1 is followed except that 42 grams of polyvinylalcohol fine powder is substituted for the 42 grams of the mixture of pectin, gelatine, and sodium carboxymethylcellulose.

EXAMPLE 5

- 25 The procedure of Example 1 is followed except that 42 grams of gum acacia is substituted for the mixture of pectin, gelatin, and sodium carboxymethylcellulose.

EXAMPLE 6

- 30 The procedure of Example 1 is followed except that a mixture of 30 grams of gum acacia and 12 grams of a powdered mixture of gelatin, pectin, and sodium carboxymethylcellulose is employed. This powdered mixture is substituted for the 42 grams of the mixture of pectin, gelatin and sodium carboxymethylcellulose to yield a satisfactory dressing.

EXAMPLE 7

- 40 The procedure of Example 1 is followed except that a mixture of 37 grams of a mixture of pectin, gelatin and carboxymethylcellulose is combined with 5 grams of benzocaine prior to the addition of the polyisobutylene to yield a medicated dressing.

EXAMPLE 8

- 50 The procedure set forth in Example 1 is followed except that a mixture of 38 grams of pectin, gelatin, sodium carboxymethylcellulose and 3 grams of amphotericin B and 1 gram of tetracycline base is employed in place of the powdered mixture of gelatin, pectin and carboxymethylcellulose to yield the medicated dressing.

EXAMPLE 9

- 55 The procedure set forth in Example 1 is followed except that no polyethylene film is applied to the flattened mass of dough-like adhesive composition. The resulting dressing can be applied directly to the surface being treated.

EXAMPLE 10

The procedure set forth in Example 1 is followed except that a mixture of 39 grams of pectin, gelatin, sodium carboxymethylcellulose and 3 grams of insulin is employed in place of the powdered mixture of gelatin, pectin and carboxymethylcellulose to yield the desired medicated dressing.

EXAMPLE 11

70 The procedure of Example 1 is followed except that 22 grams of sucrose acetate isobutyrate is substituted for the polyisobutylene and 33 grams of a powdered mixture of pectin, gelatin and sodium carboxymethylcellulose is employed. A sheet of the resultant adhesive composition may then be employed directly as a dressing or a water insoluble polyethylene film may be applied to one surface of the sheet prior to use.

EXAMPLE 12

The procedure of Example 1 is followed except that a film of polymeric fluorine-containing halogenated hydrocarbon is employed in place of the polyethylene film.

WHAT WE CLAIM IS:—

1. A protective dressing comprising a sheet of plastic adhesive material comprising a blend of a water soluble or water swellable hydrocolloid and a water insoluble, viscous elastic binder. 90
2. A dressing as claimed in Claim 1 wherein one surface of the sheet is provided with a backing film of water impervious material.
3. A dressing as claimed in either of Claims 1 or 2 wherein the hydrocolloid is polyvinyl alcohol, gum acacia, pectin, gelatin, carboxymethylcellulose, sodium carboxymethylcellulose, high molecular weight polyethylene glycol or carboxypolymethylene or a mixture of two or more thereof. 95
4. A dressing as claimed in any preceding Claim wherein the viscous elastic binder is natural rubber, silicone rubber, acrylonitrile rubber, polyurethane rubber, polyisobutylene or sucrose acetate isobutyrate. 100
5. A dressing as claimed in Claim 2 wherein the adhesive material contains about 58% by weight of binder.
6. A dressing as in any preceding Claim wherein the hydrocolloid is a mixture of pectin gelatin and carboxymethylcellulose and the binder is polyisobutylene. 105
7. A protective dressing for use in the oral, cavity comprising a thin polyethylene backing film and adhering to one side thereof a sheet of plastic adhesive material comprising a smooth blend of about 58% by weight of polyisobutylene and about 42% by weight of a mixture of pectin, gelatin and sodium carboxymethylcellulose. 110
8. A protective dressing substantially as

hereinbefore described with reference to any one of the examples.

- 5 9. A process for preparing a protective dressing comprising mixing a water soluble or water swellable hydrocolloid and a water insoluble viscous elastic binder to produce a pastic, adhesive mixture and shaping the mixture to the form of a sheet.

- 10 10. A process as claimed in Claim 9 which includes adhering a water impervious backing film to one surface of the sheet.

- 15 11. A process as claimed in either of Claims 9 or 10 wherein the hydrocolloid is gum acacia, a polyvinyl alcohol, pectin, gelatin, carboxymethylcellulose, high molecular weight polyethylene glycol, or carboxypolyethylene or a mixture of one or more thereof.

- 20 12. A process as claimed in any of Claims 9 to 11 wherein the viscous, elastic binder is natural rubber, silicone rubber, acrylonitrile rubber, polyurethane rubber, polyisobutylene, or sucrose acetate isobutylate.

13. A process as claimed in any of claims 9 to 12 which includes the use of solvents or plasticizers. 25

14. A process as claimed in Claim 9 which includes heating polyisobutylene to a temperature between 70—80° C., adding thereto a mixture of pectin, gelatin, and sodium carboxymethylcellulose, cooling and forming the mixture into a sheet, adhering a polyethylene film to one side of the sheet and cutting the sheet into strips. 30

15. A process as claimed in any of Claims 9 to 14 which includes incorporating a medicament in the dressing. 35

16. A process for preparing a protective dressing substantially as hereinbefore described with reference to the Examples. 40

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